UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW
ATLANTA, GEORGIA 30303-8960

March 8, 2021

Via Delivery as Email-attachment

Mr. Prashant K. Gupta
Honeywell, Inc.
115 Tabor Road
Morris Plains, NJ 07950

Dear Mr. Gupta:

The purpose of this letter is to provide comments to your submission of the "Identification Of Constituents of Potential Concern And Exposure Assessment - Human Health Baseline Risk Assessment Technical Memorandum for the LCP Chemicals Site, Brunswick, Georgia," dated October 2020 (hereinafter referred to as the OU2 BRA Memo). The OU2 BRA Memo is a document to be used in scoping the full Remedial Investigation and Baseline Risk Assessment Report as required under the 1995 Administrative Order by Consent. The comments below were generated by EPA's review of the OU2 BRA Memo and comments provided by the Georgia Environmental Protection Division. Please provide responses to the comments and revise the OU2 BRA Memo appropriately with all information developed for the responses.

If you have questions regarding the preceding, please contact me at (404) 562-8506 or pope.robert@epa.gov. Note that due to the EPA Region 4 response to the COVID-19 Coronavirus situation, hard copies of documents are difficult to receive, so it is requested that submittals be made by electronic methods as much as possible until the EPA Region 4 offices are fully re-opened.

Sincerely,

ROBERT POPE Digitally signed by ROBERT POPE
Date: 2021.03.08 11:28:51 -05'00'

Robert H. Pope, Senior Remedial Project Manager
Restoration & Sustainability Branch
Superfund and Emergency Management Division

Enclosure

cc: Melanie S. Jablonski, Georgia Power
James Schaeffer, BP Corporation
J. McNamara, GAEPD

GENERAL COMMENTS

1. Based on discussions held before and after the submission of the OU2 BRA Memo only limited "surface soil" as normally considered for a risk assessment exists in the Cell Building Area (CBA). The CBA is covered by a soil cover of varying thickness which was installed to prevent direct exposure during the Removal phase of the response at LCP. Wherever this soil cover is present equal to or more than 24 inches of thickness, it may be possible to assume there would be no contamination in the surface soil depth interval. In addition, the soil cover is underlain by the pre-existing concrete floor slabs which extend for a large percentage of the area under the soil cover. Presentation of the cut/fill map data in the BRA Memo is requested to clarify the discussion. EPA requests additional sampling of surface soil (0-24" below land surface) to determine nature and extent of any contamination with in the CBA within the surface soil and with enough density to be able to statistically determine if any contaminants detected should be evaluated in the risk assessment.

2. Further discussion is also needed in the OU2 BRA Memo to ensure that subsurface soil as a possible contributor through leachability to groundwater contamination is considered throughout the LCP Site. While OU3 evaluated surface soil outside of the CBA, subsurface soil contamination should be considered, discussed, and fully evaluated as a possible contributor to groundwater contamination. References to discussion and findings for the OU3 RI/BRA may be helpful and necessary to address the issue.

3. Related to the comment above, the OU2 BRA Memo should thoroughly consider, discuss, and evaluate risks related to VOCs and possible SVOCs encountered in soil borings and groundwater sampling (including Photoionization Detector or PID readings during the investigation) possibly present as a result of past fuel related operations at the LCP Site. Again, References to discussion and findings for the OU3 RI/BRA may be helpful and necessary to address the issue.

4. While EPA concurs with the use of Frequency of Detection as a Risk Assessment methodology in the OU2 BRA Memo in keeping with the methodologies used for the OU3 Risk Assessment, some COPCs might be better represented by considering additional sample results (i.e., a larger database) in order to better validate the statistics. To address this potential issue, EPA requests additional sampling of surface soil (as referenced in Comment #1 above) considered to add to the database. Please submit a work plan to be considered for the surface soil sampling in the general area the CBA focused in areas where the soil cover is less than 24" in thickness, as appropriate.

5. EPA concurs on the use of the surrogate assignment list which was previously approved by EPA Region 4 for the OU3 HHBRA as was proposed in the OU2 BRA Memo.

6. Section 4.0, Exposure Assessment of the OU BRA Memo is incomplete and appears to be a work plan, rather than a finished assessment. Section 1.0 Introduction states the following (bold added for emphasis): "Specifically, **the TM delivers the results of the screening** of the database for Site-wide groundwater and [chlor-alkali cell building area] CBA soil for identification of Constituents of Potential Concern ("COPC"), **as well as the Exposure Assessment**...". Section 3.0 does include the development of the database and the COPC screening methodology. However, Section 4.0 is written in the future tense and there are elements missing from a complete exposure assessment. For example, Page 8 states, "...the HHBRA *will* be based on unrestricted groundwater use (i.e., residential potable use)..." etc. If the intent of this section is to propose the elements that will be incorporated into a forthcoming exposure assessment, then

this should be stated clearly in the introduction of the OU2 BRA Memo. Therefore, revise the OU2 BRA Memo to clarify the intent of the document.

7. The risk assessment methodology is not identified in Section 1.0, Introduction, of the OU2 BRA Memo. Following on from Comment #1, the 8-step or site-specific process of the baseline human health risk assessment and the guidance documents upon which it is predicated should be summarized in the introduction to the memo to ensure that all upcoming parts of the evaluation are clearly noted. If Section 4.0, Exposure Assessment is, in fact, a work plan, then a definition of each part is a key element in setting up the forthcoming document. Revise Section 1.0 of the OU2 BRA Memo to cite the steps of the risk assessment methodology and the guidance documents that will be followed.

8. The Uncertainty Evaluation for COPCs presented in Section 3.4 is incomplete. Besides detection limits, consideration should also be given to uncertainties related to soil cover assumptions, data processing, and sample numbers/methods, as these items potentially impact the remainder of the risk assessment. Revise Section 3.4 of the OU2 BRA Memo to expand the uncertainty analysis to include uncertainties associated with other aspects of the data screening process, including those mentioned in this comment.

9. Surrogate RSLs are not identified in the COPC selection tables, Tables 1, 2, 3 and 4. Revise these tables to include the constituents for which surrogate RSLs were assigned.

10. It is customary in the Introduction to preview whether an ecological risk assessment will be performed for the Site. Revise the OU2 BRA Memo to include mention of whether an ecological risk assessment will be conducted. Additionally, state whether any previous risk assessments have been conducted at OU2, and if so, summarize the results.

11. Section 2.0 Background is missing a description of the past and present Site operations. Without knowing the chemical processes and the type of manufacturing that was conducted at the LCP Chemicals facility, the selection of COPCs cannot be placed in the proper context, particularly if the eventual HHBRA will be a stand-alone document. Although currently shown in an abbreviated manner in Section 4.0, revise Section 1.0 of the OU2 BRA Memo to include descriptions of the Site operations, as well as a brief summary of the Site characterization mentioned in the Introduction. Alternatively, include a statement that the additional required background information will be included in the full Remedial Investigation Report.

12. Following on from Comment #5, the discussion of the receptor populations to be evaluated in the HHBRA lacks sufficient detail. For example, rationale to support selection of the receptor populations to be evaluated is not provided. Revise Section 4.3 of the OU2 BRA Memo to include more detailed discussion of how the receptor populations to be evaluated in the HHBRA were selected, citing applicable activity and land use assumptions.

13. There is no consideration of the potential for a vapor intrusion exposure scenario in a theoretical future onsite building structure. The fifth line of Section 4.5 Potential Exposure Pathways (Conceptual Site Model [CSM]) mentions inhalation of COPCs from groundwater as a complete exposure route, however, this suggests inhalation of VOCs from potable water use. Revise the HHBRA TM to include inhalation of VOCs via vapor intrusion as a separate, potentially complete exposure route for all receptors that are assumed to be present in an onsite building structure in the future (e.g., worker, resident).

14. The Exposure Factors table on Page 10 is missing exposure parameters for the quantification of risks/hazards to Industrial workers and Trespassers. Although it is expected that the baseline residential case is conservative, and ultimately protective of less-exposed receptors, risk calculations should be performed for all receptors identified to be of concern. Revise the OU2 BRA Memo to add columns of variables pertinent to industrial workers and trespassers.

15. The Exposure Factors table refers to the receptor that will be evaluated quantitatively as a "Const Wkr" – construction worker. However, both throughout the text and on the CSMs, this receptor is referred to as an Excavation Worker. Revise the OU2 BRA Memo to standardize the name of this receptor and correct this discrepancy.

16. Exposure equations detailing the calculation of daily intake are not provided for review. Revise Section 4.8 of the OU2 BRA Memo to provide the equations that will be used and/or the source of the equations, and include the symbols cited in the exposure factors table.

17. The designations on the CSM in Figure 6, Human Health Conceptual Site Model – OU2 Groundwater, are confusing and inappropriate. Although theoretically incomplete, the groundwater pathways are complete for the purposes of this HHBRA. Revise Figure 6 to remove, "Indicates incomplete pathways that are still being evaluated quantitatively" and designate all groundwater pathways as either potentially complete or incomplete.

18. Following on from a comment above, Figure 6, Human Health Conceptual Site Model – OU2 Groundwater is missing construction (excavation) workers, who could be exposed to VOCs via inhalation in a trench. Revise Figure 6 to include construction (excavation) workers as future receptors for site groundwater.

SPECIFIC COMMENTS

1. *Section 4.3.1, pg 8, second paragraph, sentence 3 through the end of this paragraph: "The Site is currently zoned Basic Industrial...HHBRA will be based on unrestricted groundwater use (i.e., residential potable use) per EPA Guidance (EPA, 2018)...serves as a conservative baseline evaluation of theoretical residential risk."* This text paints a picture that the assessment of residential use of the groundwater is being assessed only due to very conservative guidance from EPA Region 4. In fact, this requirement for assessment of the groundwater is primarily based on the National Contingency Plan (EPA-FR 1990: "EPA expects to return usable ground waters to their beneficial uses wherever practicable…") as well as on the EPA National Risk Assessment Guidance (EPA 1989, 2010). Hence this text should be revised to reflect this wider scope of the need for protection/restoration of groundwater. The following text would be more appropriate: "Based on the current zoning for the site (Basic Industrial), as well as on Decision Documents EPA has issued for OU1 and OU3, it is not anticipated that the Site property will be developed as residential. EPA, however, always considers the potential use of the groundwater as a separate decision from the land use of the property itself. Since the state considers the groundwater underlying this site to be a source of potable water, EPA must then assess the groundwater as a potential source of residential drinking water. Accordingly, the OU2 groundwater is being assessed in a hypothetical future scenario assuming residential use of the water. The estimated scenario-specific health risks, together with health-based drinking water standards, will serve to

determine if groundwater remediation needs to be considered, and if institutional control measures need to be implemented until the health protective concentrations are achieved."

2. *Section 4.3.2, assessment of exposure to soil in the CBA: "...the HHBRA will be assess restricted and unrestricted use (i.e., residential exposure) per EPA Guidance..."* For correctness and clarity, this text should be revised to read: : "…the HHBRA will also assess restricted use (i.e., industrial onsite worker exposure) and unrestricted use (i.e., residential exposure) per EPA Guidance…"

3. *Section 4.6, Table of Exposure Factors on pg 10.* The receptors and the exposure factors listed in this table are incomplete and ambiguous. For the residential exposure scenario, the receptors should be "Residential Child" and "Residential Adult". This table should also include exposure factors separately for the other receptors shown in the Conceptual Site Models (Figures 6 & 7)- i.e., the "Adult Industrial Worker" and the "Trespasser". The specific age-span and the exposure frequency of the assumed Trespasser should be clearly defined/explained.

4. *Tables 1 & 2, groundwater COPC selection.* Units of *"mg/kg (milligrams per kilogram)"* are shown on these tables. Units for groundwater concentration should be mass of contaminant per volume of water (i.e., mg/L or µg/L). The RSL and MCL values listed in these tables indicate that the RSL and MCL values are in µg/L units. Please correct the units stated on the table and verify that the contaminant concentration data are in the same units as the RSL and MCL values.

5. *Tables 1 & 2, groundwater COPC selection, screening of chromium.* No RSL is listed here for chromium in groundwater. There are recommended EPA RSLs for trivalent chromium (Cr+3) and hexavalent chromium (Cr+6) in tap water. If no speciation of groundwater samples has been performed to determine the concentration of Cr+6, then the total chromium concentration should all be assumed to be Cr+6 for screening and assessment of groundwater (with appropriate discussion in the uncertainty section of the HHBRA regarding the uncertainty of the quantity of each form of chromium as well as the uncertainty about whether ingested chromium is carcinogenic). If this assumption results in chromium posing unacceptable health risks, speciation analysis is recommended to determine the concentration of Cr+6 in site groundwater so that the risks can be more accurately assessed.

6. *Tables 3 & 4, CBA soil COPC selection, screening of chromium.* The RSL listed for chromium in these tables is for Cr+6 in residential soil. This RSL is appropriate to use for screening of total chromium if no speciation of soil samples has been performed to determine the concentration of Cr+6. As discussed in the previous comment, if the assumption of total soil chromium all being in the Cr+6 form results in Chromium posing unacceptable health risks, speciation analysis is recommended to determine the concentration of Cr+6 in site soil.

7. *Section 4.3.1 Groundwater.* Please define/explain the word "clean" in the first paragraph, sixth line.

References:

EPA-FR 1990. *Federal Register, Environmental Protection Agency, 40 CFR Part 300, National Oil and Hazardous Substances Pollution Contingency Plan, Final Rule.* March 8, 1990

EPA 1989, 2010*. *Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual, Part A*. Interim Final, EPA OERR, December 1989.
[*updates have been added to the electronic version of RAGS-A:
http://www.epa.gov/oswer/riskassessment/ragsa/index.htm]

EPA 2018b. Region 4 Human Health Risk Assessment Supplemental Guidance. March 2018 Update.
[http://www.epa.gov/risk/region-4-human-health-risk-assessment-supplemental-guidance]

Comments Provided by Georgia Environmental Protection Division (EPD)

1) Section 3.2.2: CBA Subsurface

This Section mentions that a mixed soil depth of 0-5 feet below ground surface (ft bgs) will be evaluated. Since there are more detections from 2-5 ft bgs than in the 0-2 ft bgs interval, there is a concern that combining surface soil and subsurface soil to evaluate mixed soil will dilute the mixed soil exposure point concentration (EPC). Section 2.21 of EPA's *Region 4 Human Health Risk Assessment Supplemental Guidance* [R4HHRA][1] indicates that surface and subsurface soil (which the guidance states is typically "*from the bottom of the defined depth of surface soil up to 10 feet below land surface*") should be evaluated as separate media. Please justify evaluating mixed soil and/or provide correspondence where this was previously approved by EPA and EPD. If not, please evaluate surface and subsurface soil as separate media in the HHBRA.

2) Section 3.4: Uncertainty Evaluation for COPCs

The Memo mentions that a "*designation of Potential COPC ("PCOPC") is given to constituents that were not detected, but had more than 5% of detection limits greater than the screening level*". The designation of "PCOPCs" does not conform to the recommended constituent of potential concern (COPC) selection procedures outlined in Section 2.6 of EPA's *Region 4 Human Health Risk Assessment Supplemental Guidance* [R4HHRA][2]. Also, since the HHBRA indicates that PCOPCs will be evaluated in the risk assessment, referring to constituents as PCOPCs adds unnecessary confusion given that the term "COPCs" already refers to all constituents that are further evaluated in a risk assessment. To address this comment, please label all PCOPCs as COPCs and evaluate all COPCs in the risk assessment.

3) Section 4.3.2: CBA Subsurface Receptors and Exposure

The Memo discusses control of exposures; "…subsurface disturbance of the CBA will be prohibited and limited to minor reworking of the soil cover or addition of hardscape surface (e.g., parking or surface storage)". However, the presence of free-product mercury in the CBA will not only result in physical exposures; leaching to groundwater must also be considered.

4) Section 4.6: Exposure Parameters

[1] [R4HHRA] = United States, United States Environmental Protection Agency, EPA Region 4 Scientific Support Section, Superfund Division. (2018, March). *Region 4 Human Health Risk Assessment Supplemental Guidance*. Retrieved from https://www.epa.gov/sites/production/files/2018-03/documents/hhra_regional_supplemental_guidance_report-march-2018_update.pdf

[2] [R4HHRA] = United States, United States Environmental Protection Agency, EPA Region 4 Scientific Support Section, Superfund Division. (2018, March). *Region 4 Human Health Risk Assessment Supplemental Guidance*. Retrieved from https://www.epa.gov/sites/production/files/2018-03/documents/hhra_regional_supplemental_guidance_report-march-2018_update.pdf

The Memo indicates that central tendency exposure (CTE) will be evaluated in the HHBRA along with reasonable maximum exposure (RME). Since remedial decisions will only be made on RME, it is recommended that the CTE evaluation not be included in the HHBRA to reduce any confusion that may result. If the HHBRA will include a CTE evaluation, please place the evaluation into a separate section and explicitly mention in the text that remedial decisions will only be made based on RME. It is recommended that the OU2 HHBRA explicitly state that remedial decisions will only be made based on RME.

5) Section 4.7.3: Groundwater EPC

a) There are concerns with the proposed approach for determining groundwater exposure point concentrations (EPCs). The RPs correctly cite EPA's *Determining Groundwater Exposure Point Concentrations* [GWEPC][3] when stating that EPCs should be calculated using data from groundwater wells located within the core of the plume. However, page 6 of [GWEPC] also states that "*assessors need adequate characterization of the entire plume to be able to identify the core of the plume*". Section 4.7.3 does not discuss if and how the plume will be characterized. Also, Section 4.2.1 of the Memo states that there is contaminant leakage from the Satilla Formation into the Ebenezer Formation and that the latter Formation has a high degree of concentration attenuation. If so, it may not be appropriate to aggregate four years of sampling results since older results may not represent current site conditions. Please address these concerns by providing additional information in the Section. Please note that if site and data considerations preclude deriving a groundwater EPC based on the upper confidence limit of the arithmetic mean (i.e. 95% UCL), [GWEPC] provides for using the maximum detected concentration as the EPC.

b) The Memo mentions that the [GWEPC] expresses a preference for using data from two sampling events from the previous year to calculate the EPC. Furthermore, the Memo discusses that systematic monitoring was not conducted and the most recent available data is from 2017. Consistent with the [GWEPC] guidance's inclination to use data from the previous year, will provision be made for the collection of more recent samples? Bullets in this section also state that samples will be used from the 2017 to 2020 time period, please clarify or revise, as sampling from 2017 was used and mentioning samples post-2017 can lead to further confusion.

c) It appears that sufficient information is not available to characterize the core of the plume in accordance with [GWEPC]. Thus, please use the greater of the maximum detected groundwater concentration or maximum groundwater reporting limit as the groundwater EPC. In addition, address the concerns about aggregating four years of groundwater sampling results. Please add additional information in the HHBRA to address these concerns.

6) Figure 5: Area Water Wells

Please incorporate on-site production wells on Figure 5 showing the Area Water Wells.

7) Figure 6: Conceptual Site Model – OU2 Groundwater

[3] [GWEPC] = United States, United States Environmental Protection Agency, Office of Solid Waste and Emergency Response. (2014, February). *Memorandum for Determining Groundwater Exposure Point Concentrations, Supplemental Guidance* (OSWER Directive 9283.1-42). Retrieved from https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236917

The conceptual site model (CSM) only evaluates the inhalation/ingestion/dermal contact of groundwater for the hypothetical resident. Since industrial and excavation workers are expected to be present at the facility, please modify the CSM so that industrial worker and excavation worker inhalation/ingestion/dermal contact exposure to groundwater is evaluated.

8) Tables 3 and 4: Cell Building Area (CBA) Soil COPCs Selection

The Tables show that for both semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs), there is only one surface soil sample and generally less than five mixed soil samples. This is not sufficient characterization of SVOCs and VOCs and is of concern given that several SVOCs and VOCs are being eliminated as COPCs based on the results of one sample; see #2a re FOD above. Section 4.2.2 indicates that polycyclic aromatic hydrocarbons (PAHs) are "*ubiquitous throughout the CBA study area*" and that there is a "*probable petroleum smear zone caused by historical water table fluctuation*" which indicates that both SVOCs and VOCs are of concern at the CBA. To ensure that there is enough information to adequately characterize the risks from SVOCs and VOCs exposure in soil, please provide a plan for further characterization (e.g. collecting more samples) of soil SVOCs and VOCs.

9) Executive Summary

Editorial consideration – please close the parenthesis after the RAGS citation in the last sentence of the Executive Summary opening paragraph.